

# Two-Dimensional Photonic Crystal Cavity and Channel Add/Drop Filter

## Abstract

In 2D photonic crystals, cavities having a heightened  $Q$  factor are made available, wherein combining the high  $Q$  cavities with waveguides affords channel add/drop filters having high resolution. In a cavity constituted by a point defect within a 2D photonic crystal, the 2D photonic crystal is configured by an arrangement, in a two-dimensional lattice of points defined in a slab (1), of low-refractive-index substances (2) having a low refractive index relative to the slab (1) and being of identical dimension and shape. The point defect (4) contains a plurality of three or more lattice points that neighbor one another, and in these lattice points no low-refractive-index substances (2) are arranged; therein the dimension of the low-refractive-index substance (2) that should be arranged to correspond to at least one of the lattice points nearest the point defect (4) is dimensionally altered from a predetermined dimension.